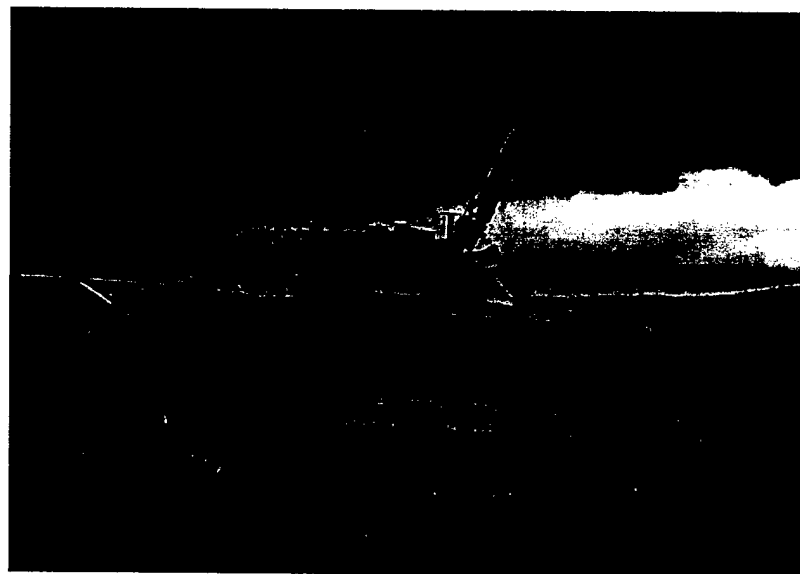




Mortars for Mounted Maneuver: Army XXI



Peter Burke
OPM Mortars

Tank-automotive & Armaments **COM**mand
Committed to Excellence

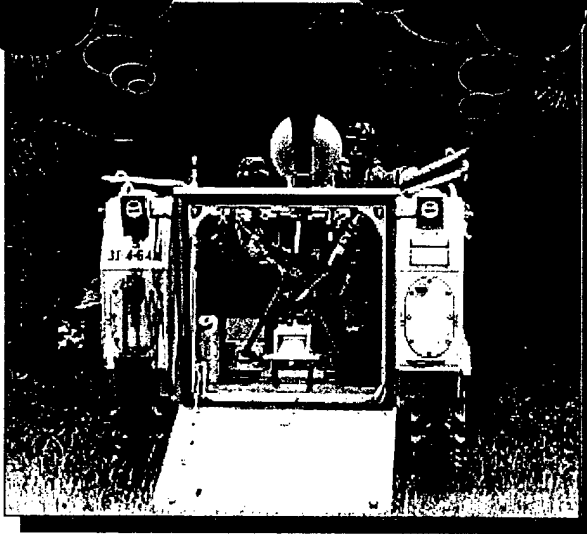
Purpose/Agenda

- Discuss mortar directions for mounted warfare to 2010 and beyond
 - M1064A3 with Mortar Fire Control System
 - Turreted Mortar
 - Ammunition Upgrades
 - Precision Guided Mortar Munition
 - Extended Range DPICM
 - Dragon Fire
 - Mobile Dragon
 - Summary

M1064A3 w/ Mortar Fire Control System

Increased
Responsiveness:
Digital Commo
On board ballistics

Increased
Survivability:
No Dismount
Shoot & Scoot



Information Dominance

Performance:

- Pointing accuracy: 3 mil
- Ballistic calculation: Under 10 seconds
- Position accuracy: 10 meter CEP
- Digital Communications
- Automatic MET updates
- Automatic position reporting
- Embedded training
- First round out: Less than 1 minute
 - 0-1 Adjust, 3 Fire For Effect (FFE)

Program Status

- Engineering & Manufacturing Development
- Production start in 00

First Round Out

Current	NTC 94-07	Warrior Focus
8 min	3 min	1 min 30 sec

Focused
Dispatch
1 min

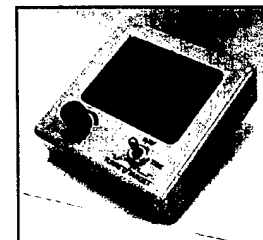
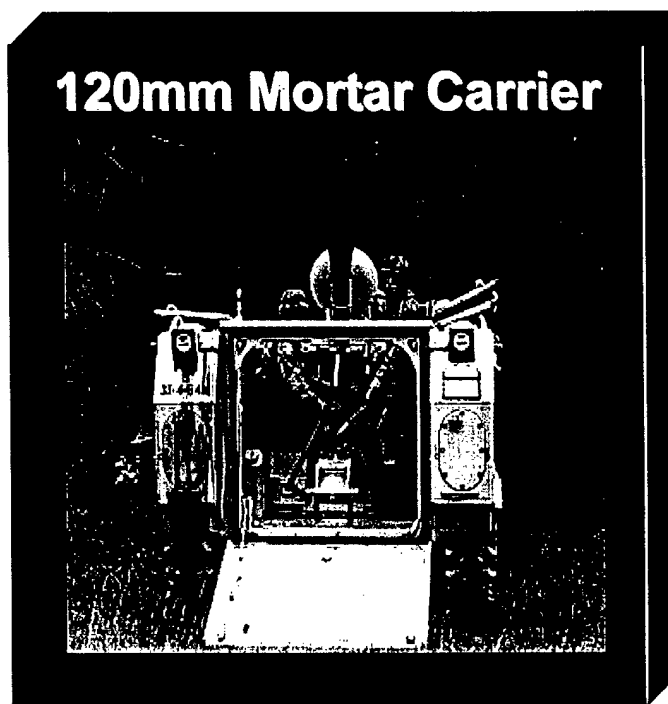
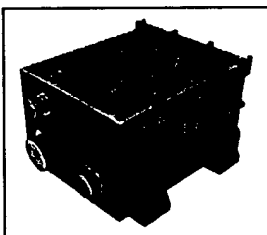
***Demonstrated performance:
Integrated digital on-board
fire control for mortars***

MFCS Components

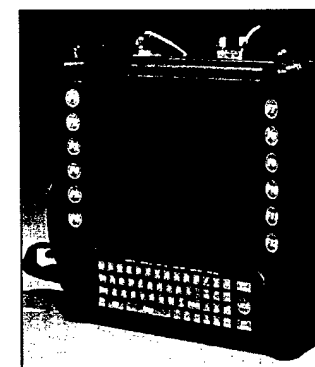


**Digital & Voice
Communications**
SINGARS SIP, EPLRS

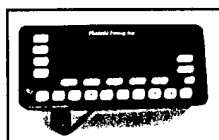
**Navigation & Pointing
Device**
Tube Mounted



Driver's Display
Guide to Azimuth of Fire
Navigation Aid

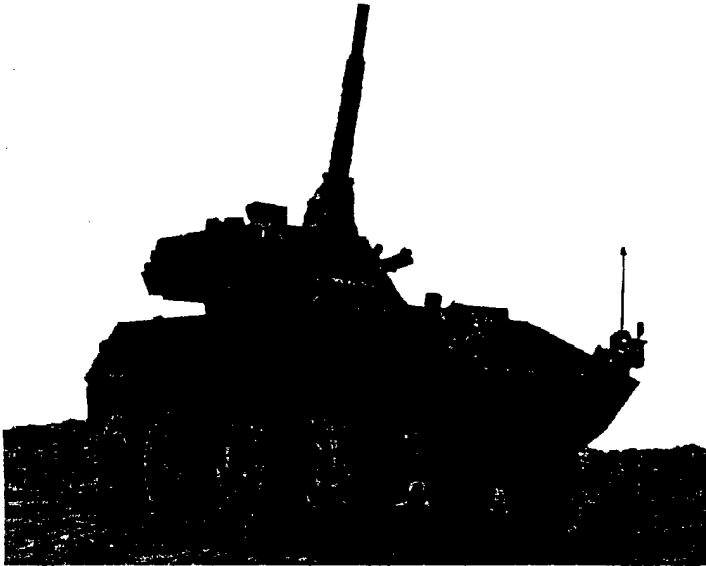


Gunner's Display
Replaces Optical Sight
Digitally Linked to Pointing
Device & CI
Improved Gun Laying Procedure



Commander's Interface (CI)
Automatic Ballistic Computations
Digital Interface with Tactical Internet for
Situational Awareness & AFATDS

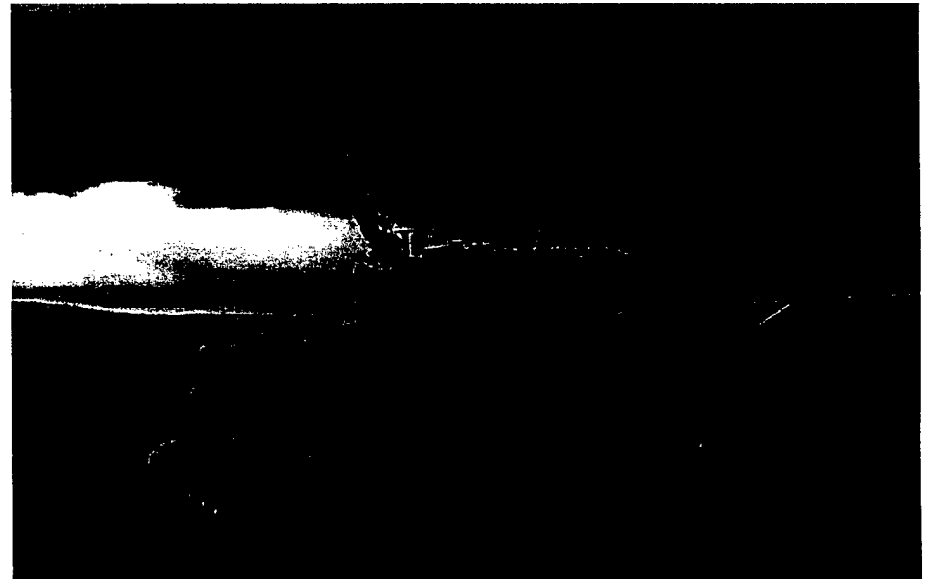
SANG Turreted Mortar



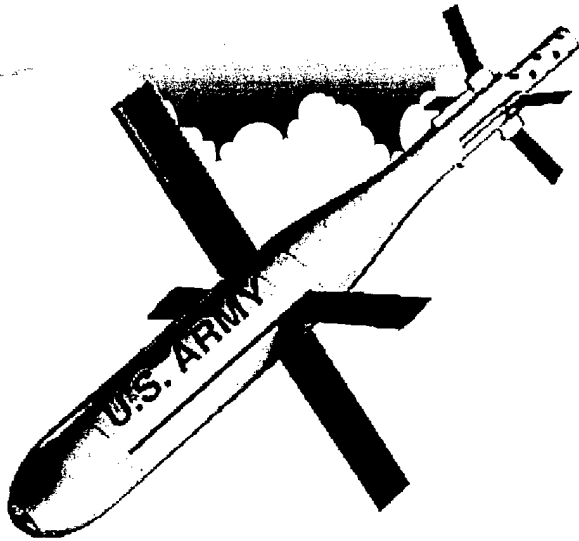
- 120mm breech loaded smooth bore
- Fully integrated fire control
 - Autolay
 - Digital communications
 - Thermal sight
 - Laser rangefinder
 - GPS pointing and navigation
- Flexible weapon system
 - Indirect fire (high and low angle)
 - Direct fire
- Ammunition range of 9200 meters
 - Compatible with future ammo
 - Longer tube extends range
- Currently being qualified on the LAV at Yuma Proving Ground
- Limited technical assessment conducted by USMC Warfighting Lab at 29 Palms

Mortar Turret on M113

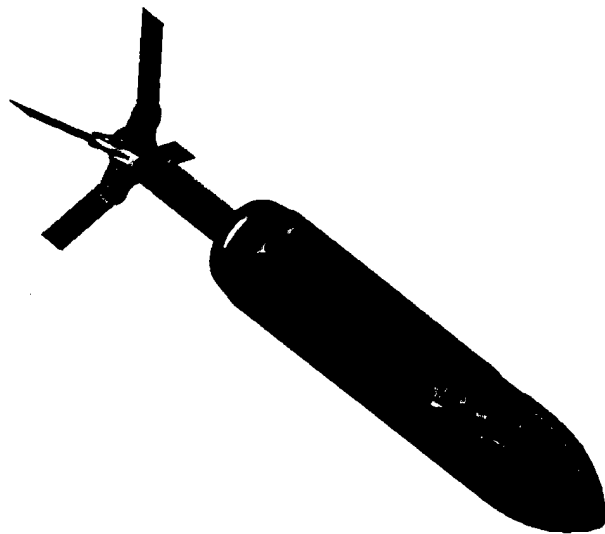
- SANG LAV turret and other mortar turrets have been integrated on the M113 chassis
- Firing demonstrations conducted for Middle Eastern countries
- USAIC plans to convert some M1064A3s to turreted mortars after 2010
- Development funded in extended plan for 07 start
- Other chassis can be considered, from the Bradley to the Future Combat Vehicle



Key Ammunition Upgrades



- Precision Guided Mortar Munition
 - Laser guided 120mm projectile
 - Extended range using glide concept
 - ATD completion in 01
 - EMD start in 02
-

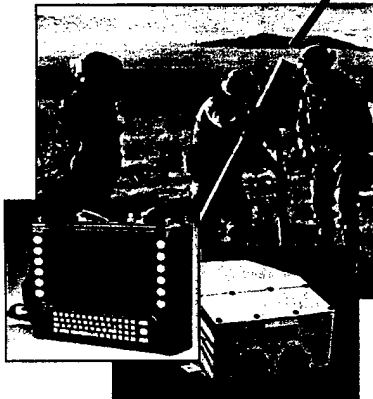


- 120mm Extended Range DPICM
 - Tractor rocket motor
 - Embedded multi-functional fuzing
 - Currently demonstrating components in tech base

Precision Guided Mortar Munition

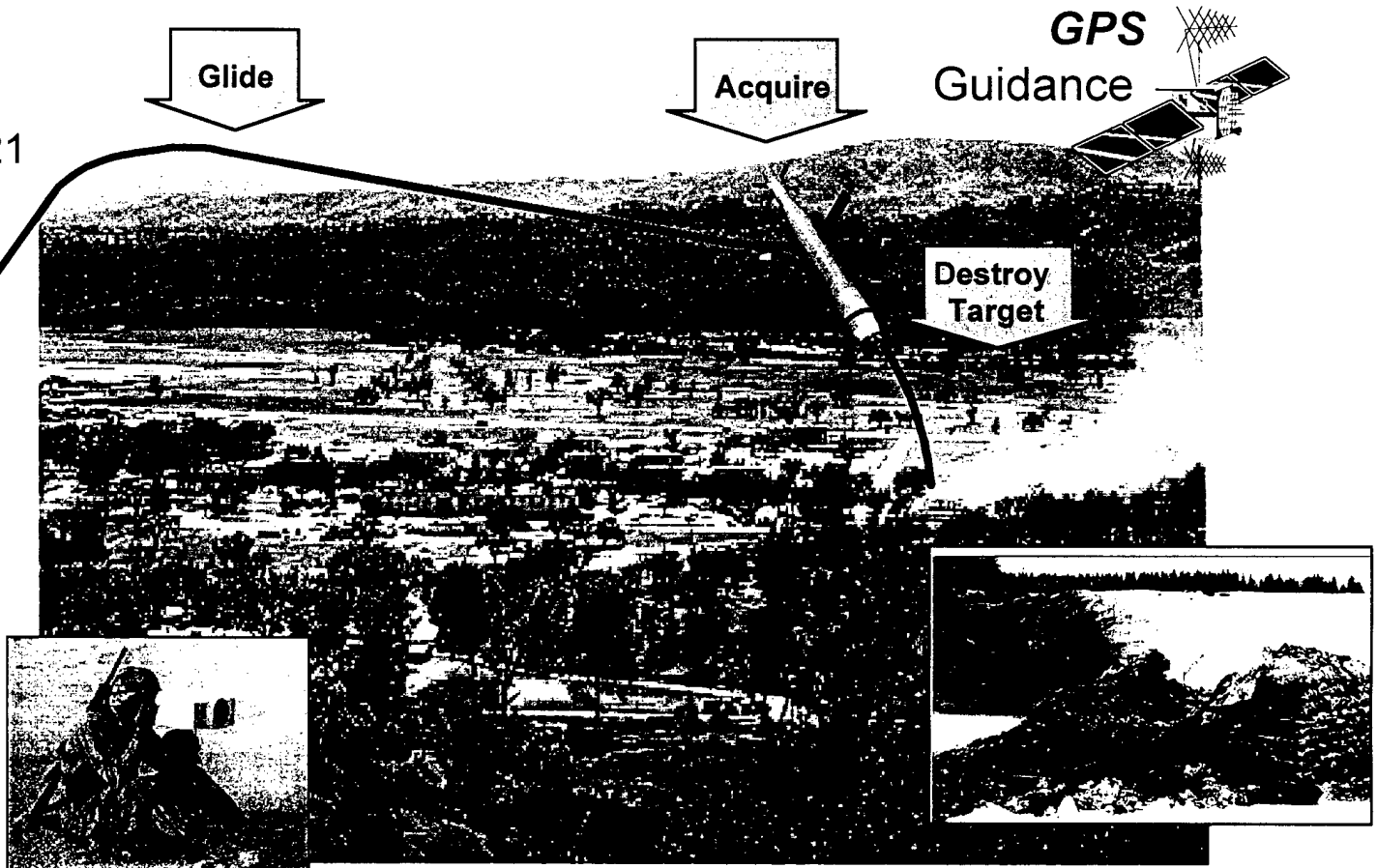
Task Force Commander's Precision Indirect Fire Weapon

Range: 12-15 km
Platform: M120 & M121
Mortar System
No additional force
structure



120mm Mortar
with MFCS is
more **Responsive**

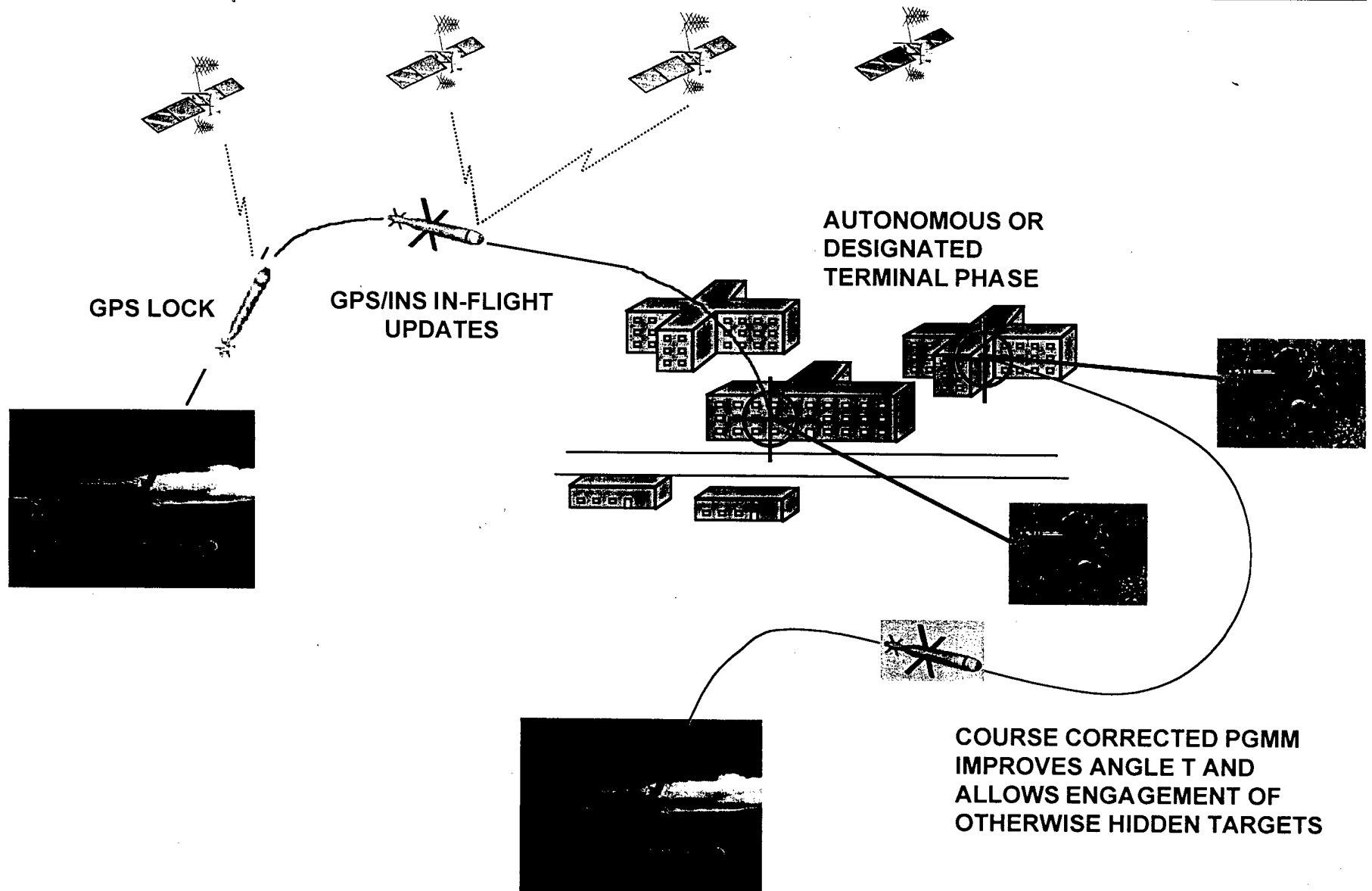
Leverages other programs for Total System Improvement



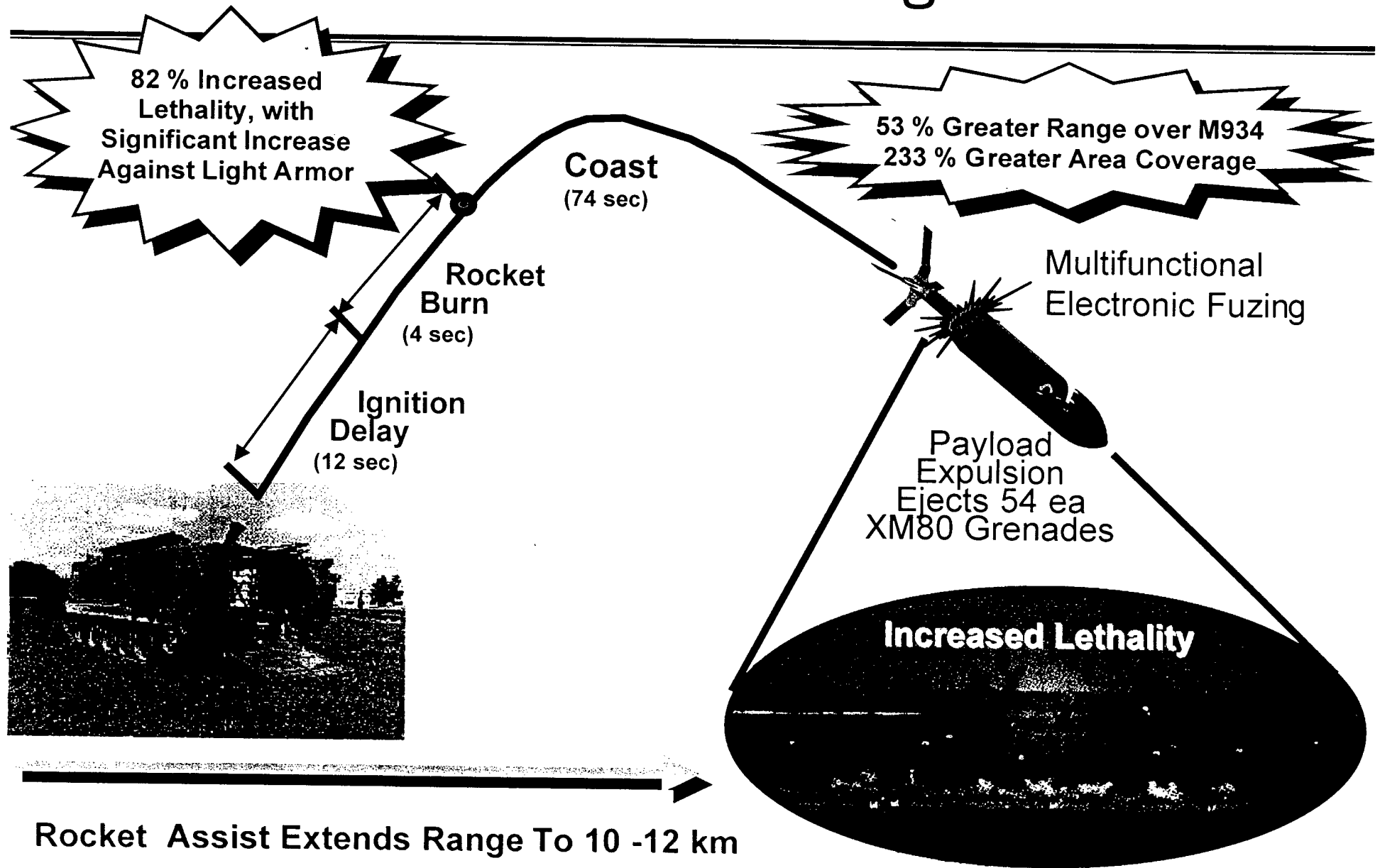
LLDR and Striker
Pinpoint and **Designate**

PGMM **destroys** bunkers,
structures, MOUT targets with
low collateral damage.

PGMM Upgrade: In-flight Course Correction



XM984 Extended Range DPICM

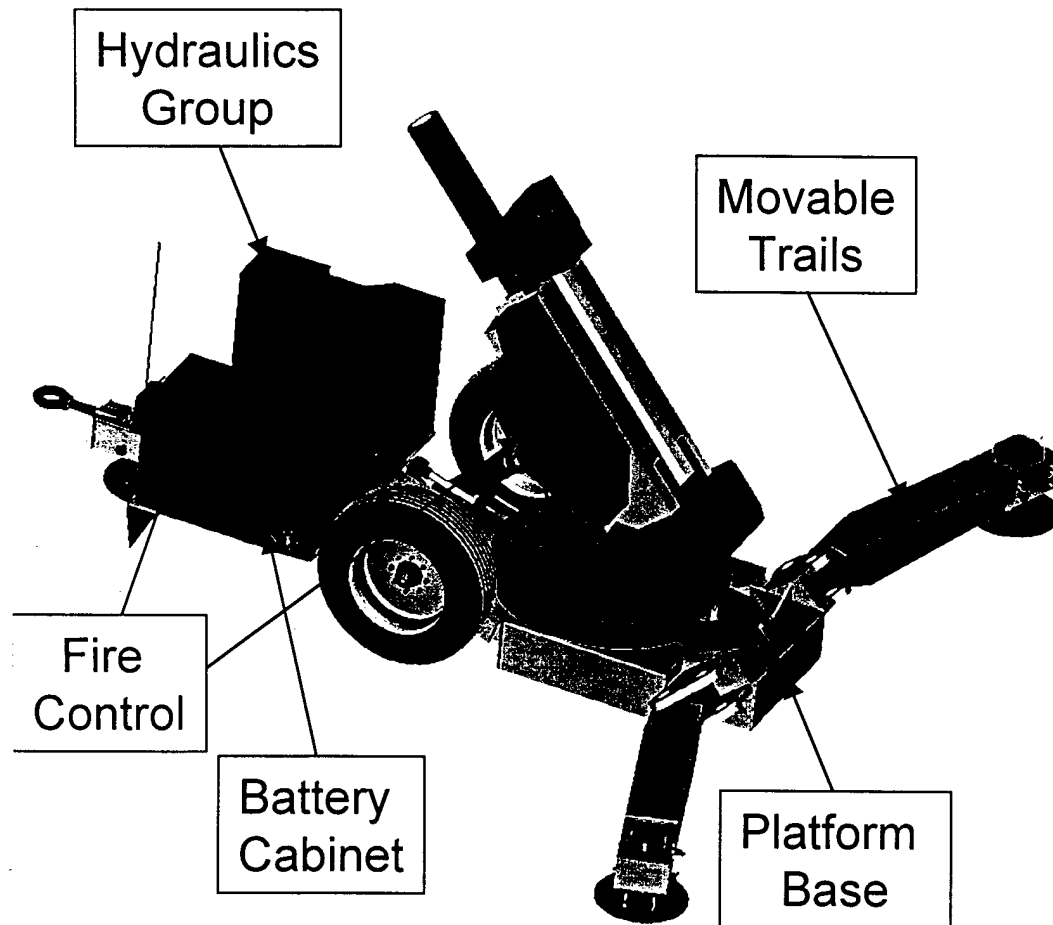


USMC Warfighting Lab Initiatives



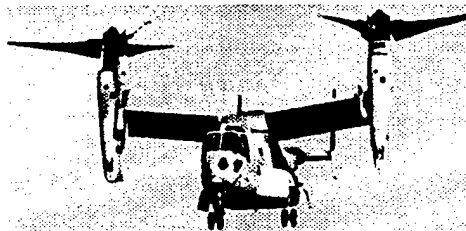
- Dragon Fire
 - Unmanned 120mm mortar
 - Early concept in Hunter Warrior AWE
 - Technical demonstration in Sep 98
 - Included in Urban Warrior AWE
- Mobile Dragon
 - Early concept spinoff from Dragon Fire
 - Automated fire for the heavy maneuver forces

USMC Dragon Fire



- Emplaced by MV-22 Osprey, helicopter, air foil, HMMWV
- Deploy systems near & forward of the FLOT
- Receive digital calls for fire
- Conduct operations autonomously
- Reloaded, recovered or abandoned
 - anti-tamper capability

Dragon Fire Operational Concept



1. Inserted by MV-22 Osprey, crew installed within 2 minutes

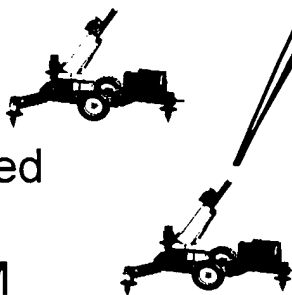
2. Dragon Fire maintains a low visual and power profile until alerted



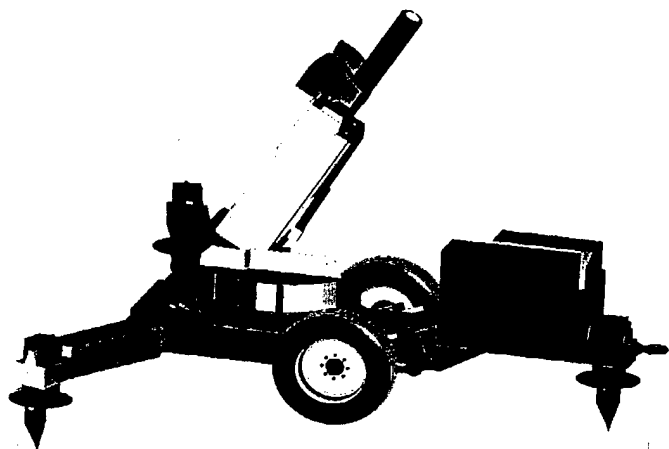
3. FO with TLDHS sends digital call for fire message to Dragon Fire



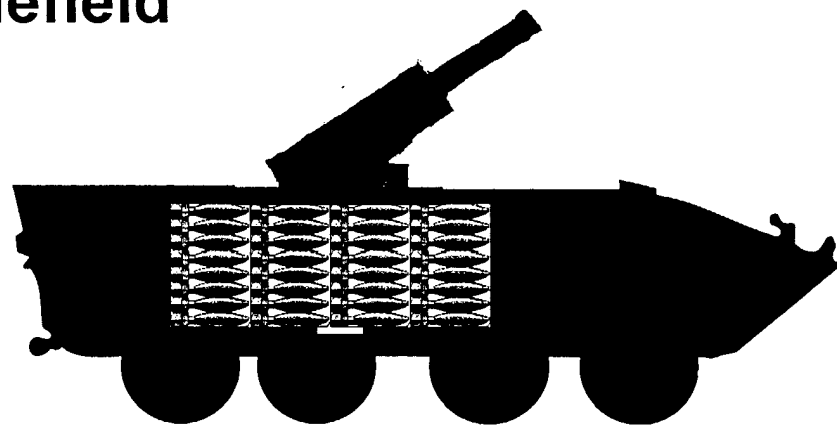
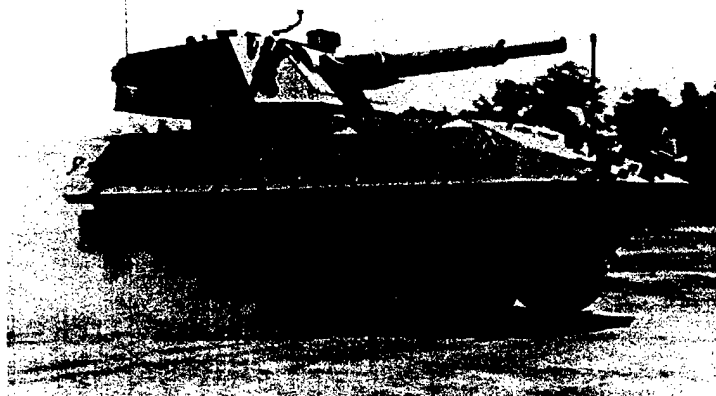
4. Dragon Fire automatically executes mission with selected round from mortar suite of ammunition, including PGMM



USMC Mobile Dragon



- Transition Dragon Fire automation to manned platform
- Driver only or possibly a commander
- Automated response to calls for fire
- Fire on the move
- Replace crew stations with additional ammo storage capability
- High mobility maintains pace of future battlefield



Mounted Mortars for XXI

- M1064A3 with MFCS provides a growth platform
- Smaller logistics tail (PGMM, DPICM)
- Massed fires
 - Multiple Rounds Single Impact
 - Supplemental automated guns
- Versatile
 - Indirect and direct fire
 - Extensive suite of munitions
 - Mortars proximity to each other no longer required
- High OPTEMPO
 - Responsive fires with mortar fire control improvements
 - Fire on the move